

Subject card

Subject name and code	Monographic lecture - Interactions of antimicrobials agents with metalions, PG_00119774						
Field of study	Chemical Business						
Date of commencement of studies	February 2026		Academic year of realisation of subject		2026/2027		
Education level	Master's studies		Subject group		Obligatory subject group in the field of study Optional subject group		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	2		ECTS credits		3.0		
Learning profile	academic		Assessment form		credit		
Conducting unit	Department of Bioinorganic Chemistry -> Faculty of Chemistry -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. Mariusz Makowski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	0.0	0.0	30
	E-learning hours included: 0.0						
	Additional information:						
	Lecture with multimedia presentation						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	30		5.0		40.0	75
Subject objectives	To make students familiar with the chemical structure, classification, methods of synthesis, analysis, known mechanisms of action, methods of searching for new antimicrobial preparations based, among others, on combinations of complex metal ions with selected groups of ligands;						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[BCHMU2_K04] Is willing to properly assess the acquired knowledge, respect and disseminate it in order to solve specific cognitive and practical issues.	A student: 1. Understands the need for continuous learning. 2. Demonstrates creativity in working independently and in teamwork. 3. Understands the social aspects of the practical application of the acquired knowledge and skills and the associated responsibilities.	[SK1] oral statement/conversation/discussion [SK4] test/exam - oral or written
	[BCHMU2_U01] Is able to, on the basis of her/his knowledge, propose a solution to problems in chemistry, taking into account the economic aspect by using advanced measurement techniques.	A student: 1. Has the ability to solve problems of inorganic chemistry independently. 2. Can use basic analytical techniques (potentiometry, conductometry, voltamperometry and spectrophotometry, and others) for research.	[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written
	[BCHMU2_W01] Knows and understands complex physicochemical processes and is able to analyse their course in connection with other fields of science.	A student: 1. Knows the basic classification systems of physicochemical methods used for quantitative and qualitative testing of inorganic compounds. 2. Knows the processes and understands the effects that occur during the test depending on the method used. 3. Knows terminology and chemical nomenclature for inorganic compounds	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion
	[BCHMU2_U02] Is able to define her/his interests, develop them within the chosen direction and in connection with the subject of her/his master's thesis by implementing the process of self-education and planning her/his professional career.	A student: 1. Has the ability to solve problems of inorganic chemistry independently. 2. Can use basic analytical techniques (potentiometry, conductometry, voltamperometry and spectrophotometry, and others) for research.	[SU1] oral statement/conversation/discussion [SU4] test/exam - oral or written
	[BCHMU2_W05] Knows and understands the main trends in the development of chemistry combined with economics as two interpenetrating scientific disciplines.	A student: 1. Knows the basic classification systems of physicochemical methods used for quantitative and qualitative testing of inorganic compounds. 2. Knows the processes and understands the effects that occur during the test depending on the method used. 3. Knows terminology and chemical nomenclature for inorganic compounds	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion
Subject contents	characteristics of antimicrobial preparations based on metal ions and organic ligands; mechanism of action of selected antimicrobial preparations; drug resistance; physicochemistry of complexes; presentation of examples of anticancer drugs based on metal ion complexes and the latest scientific trends regarding antimicrobial preparations		
Prerequisites and co-requisites	Completed course "General Chemistry", "Inorganic Chemistry", "Organic Chemistry".		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	written examination with 8-10 open-ended questions	50.0%	100.0%
Recommended reading	Basic literature	A. Zejca, M. Gorczyca Chemia leków, wyd. PZWL, warszawa 2004 Z. Markiewicz, Z. A. Kwiatkowski Bakterie, antybiotyki, lekooporność, wyd. PWN, Warszawa 2012 R.B. Silverman, Chemia organiczna w projektowaniu lekow, wyd. WNT, Warszawa, 2004 S.J. Lippard, J.M. Berg Podstawy chemii bionieorganicznej	

	Supplementary literature	Positions indicated by the lecturer
	eResources addresses	
Example issues/ example questions/ tasks being completed	Characterize the cis-platinum.	
Work placement	Not applicable	

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